

ANNALS

OF

NATURAL HISTORY.

I.—*On a new Oscillatoria, the colouring substance of Glaslough Lake, Ireland.* By JAMES L. DRUMMOND, M.D.,
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HAVING in the month of June last paid a visit to a friend resident at Glaslough, in the county of Monaghan, I embraced the opportunity of inquiring into the origin of the name of that place. It is a small town built on the borders of a lake, which occupies an area of about one hundred acres in extent, and from it the town has its name. Glaslough signifies in the Irish language “the green lake,” an appellation given to it from time immemorial, on account of the hue of its waters, which exhibit a green tinge equal to, or exceeding in intensity, that of the sea, though it is not at all times equally striking.

The opposite banks of the lake, which are high but not rocky, are thickly clothed with a wood of noble trees, and on my first seeing this beautiful sheet of water I was inclined to suspect that its green colour might arise simply from the reflexion of the rich foliage on its surface. On further inquiry, however, I ascertained that the colour resided in the water itself, and was owing to what I believe is an undescribed *Oscillatoria*.

When a little of the water is lifted in the hand it seems perfectly transparent, and it appears equally clear at the edges of the lake, in a depth of not more than a few inches, and there the pebbles at the bottom show perfectly distinct, without any intermediate cloud to obscure them. But at a depth of two feet the bottom is undistinguishable, and the water presents a sort of feculent opacity, accompanied with a dull, dirty, green-

ish hue. On lifting some of this in a glass, it seems at first sight quite transparent, but on holding it up to the light, innumerable minute flocculi are seen floating through every part of it, and producing a mottled cloudiness throughout the whole.

On examining these under the microscope their nature was at once obvious; they consisted of excessively fine simple fibrillæ belonging to some species of *Oscillatoria*. On inquiry among my friends at Glaslough, I found that several theories were entertained respecting the green tinge of the lake, very wide of its true cause: according to one surmise it was owing to some mineral impregnation, probably of a copper mine at the bottom of the water; and another, equally unfounded, attributed it to the drainings of a tan-yard running from the town.

At first I could only find the plant diffused through the water, as above mentioned; but at length I discovered a wet ditch extending from the lake into an adjoining field, and there it appeared swimming on the surface in large masses several inches in thickness, and above a foot and a half in length. These seemed evidently to be produced by an agglomeration of the filaments floated in from the lake, matted together at the surface and increased in growth. The masses thus formed had a considerable degree of toughness, and were so slippery that they could not be lifted out on the point of a stick. The surface of these masses where dried by the contact of the air was of a bright blueish verdigris hue, while the parts immersed in the water were of a dull opaque green.

That these masses were formed by an aggregation of filaments which had previously floated through the lake, but now being freed from the agitation of the waves were allowed to congregate in the motionless water, I would infer from the tendency they show, when undisturbed, to ascend to the surface. This tendency I ascertained, not from any experiment of my own, but from the fact, familiar to every inhabitant of Glaslough, that when the water of the lake (which is much used for washing and other domestic purposes) has stood at rest in a vessel for a night or two, a green scum spreads over its surface, which it is usual to remove before use, either by

skimming as cream is skimmed off milk, or by straining the water through a fine cloth.

Masses similar to those I found in the ditch are often seen floating at the sides of the lake, or cast ashore in large quantities; but I could not ascertain with precision from the accounts I received, whether this took place especially at some seasons, or whether at all times after a continuance of calm weather. I am disposed to conjecture that the latter is the case; but on this head I could determine little from my own observation, as during the greater part of my visit the weather was wet and blustery, and calms of very short duration. The lake too was said to exhibit much less of the green tinge than is often observable. That the agglutinated masses alluded to are much more copious in the lake at some times than at others, is illustrated by a remark used by the inhabitants of its neighbourhood on their appearance, viz. that "the lake is purging itself."

In the hope of detecting the stratum, if indeed there be any such, from which the floating filaments in the lake might have their origin, I attempted in a boat, in company with my friend the Rev. Mr. Smith of Glaslough, to bring up some debris from the bottom. Our instrument for dredging was indeed very imperfect, being only a fagot of branches with a weight attached. We tried various depths from forty-five feet (which seems to be the deepest part) to three or four, but the experiment was altogether fruitless, our instrument coming up as clean in general as it went down, and without any trace of the object of our search.

Some years ago the late Colonel Leslie put a number of swans upon the lake, one only of which now remains, and it was observed that while they continued on it the peculiar properties of the place were lost. This however can only, I presume, refer to the disappearance of the glutinous masses, which the birds had devoured as fast as they were formed.

Another observation which I have to make is, that although the County Monaghan abounds in lakes, the phænomena now mentioned are peculiar to this alone, at least such was the confident assertion of every one with whom I conversed on the subject; and there is a beautiful little sheet of water called Kel-

vey Lake, the only one which I had an opportunity of examining, situated about a quarter of a mile from Glaslough, in which I could trace no similar appearance.

The history now given of the Glaslough *Oscillatoria* bears a striking resemblance in some points to that of the *O. rubescens* of the Lake Morat in Switzerland, as described by Decandolle in the third volume of the *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève*, from which I select the following particulars. It is stated in that account that the lake Morat during every spring presents the appearance of a reddish scum upon its surface, which the fishermen express by saying that the lake *is in flower*. But in the spring of 1825 this phænomenon was so very remarkable as to strike with astonishment the inhabitants of its banks, and an article published by Dr. Engelhardt respecting it excited the attention of the Swiss naturalists, especially those of Geneva. In the year stated, the red appearance continued from the month of November till May, and its unusual exuberance was supposed to originate from the great mildness of the winter, and the consequent smaller elevation of the water of the lake being favourable to the development of the matter, which was evidently organic, and caused the redness.

During the early hours of the day the lake presented nothing remarkable, but soon after there appeared long, red, very regular and parallel lines along its borders and at some distance from the shore; the breezes urged this matter into the little creeks, and heaped it up around the reeds. There it covered the surface of the lake like a fine reddish scum, forming patches of colours varying from greenish black to a beautiful red; it was also seen of a yellow, a red, and grey of every shade; some of them were marbled, and others presented figures much resembling those produced by positive electricity on the electrophorus. During the day this mass exhaled an infectious odour, but during the night all disappeared, to be renewed on the following day.

When the lake was agitated by strong winds, the phænomenon disappeared, but again presented itself on the re-establishment of a calm.

Many species of fish, as perch and pike, probably from ha-

ving eaten of this matter, had their bones and flesh tinged red as if they had been fed on madder, but without any inconvenience, as was remarked by Dr. Engelhardt. The same observer and M. Frechsel relate that other small fishes which came to the surface for air, or in pursuit of flies, perished after some convulsions when they traversed this matter, either, according to some, from having eaten of it, or according to others from the mephitic gas at the surface*.

In the *Oscillatoria* of Glaslough, the thick conglomerated masses had a heavy but nothing of a mephitic odour like that of *O. rubescens*, and the plant, so far as I could learn, seemed to have no evil influence on any species of animal, the lough abounding in pike, eels, roach, and perch. I also observed sticklebacks in the shallow parts, and I believe there are also some trout. I found *Helix stagnalis* and some other lacustrine shells in abundance, and coots and water-hens were numerous.

From the accounts I received, the green colour is evident in the lough throughout the year, and if I may judge from my own observation, every drop of it is impregnated with the oscillatory filaments. On examining specimens in the microscope, I sometimes observed their motions to be very vivid, and in other instances little or no motion could be perceived. They are extremely minute; their transverse striæ very numerous, and at distances of about half a diameter from each other.

The filaments in the conglomerated masses appeared to me to be many inches long, and running parallel together; the broken fragments dispersed through the lake cross each other in all directions. Presuming that this is an undescribed species, I would suggest the specific name *ærugescens*, from its assuming the blueish verdigris colour on drying, as being the most characteristic appellation.

I have only to remark further, that I could perceive nothing peculiar about the lake at Glaslough to which might be attached a conjecture as to the growth of one aquatic more than another; the shore being in some places composed of shelving clay banks, in others flat and muddy, and in others of small calcareous stones and gravel: one considerable portion is of peatbog. Among the plants fringing its edge I observed *Arundo*

* Lib. cit. part. sec. p. 29 et seq.

Phragmites, *Hippuris vulgaris*, *Menyanthes trifoliata*, *Alisma Plantago*, *Equisetum limosum* and *palustre*, *Scirpus lacustris*, *Chara hispida*, *Nymphaea alba*, and several others.

The following are all the characteristic marks of this species that I can recollect.

O. ærugescens, Filaments extremely slender, opaque green, conglomerated in large toughish glutinous masses in sheltered calm situations, and nearly floating on the surface; in more open exposures broken into innumerable fragments, and suspended like cloudy flocculi in the water. Striæ numerous, at distances of about half a diameter apart from each other. Oscillatory motion often lively. Colour when dried a beautiful æruginous blue; adheres strongly to paper, exhibiting a glossy surface; filaments expanding by moisture so as to seem recent, and sometimes resuming the oscillatory motion.

Hab. Lake at Glaslough, County Monaghan, Ireland.

Belfast, August 14, 1837.

II.—Some Remarks on the Germination of *Limnanthemum lacunosum*. By Dr. GRISEBACH.

[With a Plate.]

WHEN I was preparing a year and a half ago a monograph on the *Gentianeæ*, I ventured to hope that my endeavours would be furthered by the assistance of such botanists as have larger materials at their disposal, this being the spirit of a science whose followers seem to participate in that bountiful and tranquilly working principle which reigns over the Vegetable Creation. Far from finding myself disappointed in these views, I have received everywhere the most liberal, generous, and disinterested support; and am only anxious lest my labours should not correspond with the unparalleled confidence which some of the most eminent naturalists were kind enough to show me. Among the very rich collections of *Gentianeæ* belonging to Sir Wm. J. Hooker, all of which he entirely entrusted to me by sending them hither, there were germinating specimens of *Limnanthemum lacunosum*, (*Villarsia*, Vent.)